

WHAT IS CLAIMED IS:

1. A two-level supply voltage detection circuit, comprising:

5 a LV-side power supply detection circuit connected to a HV-side power supply, the LV-side power supply detection circuit outputting a first signal which is active when a voltage input from the HV-side power supply has a value equal to or higher than a

LV-side reference value;

10 a HV-side power supply detection circuit connected to the HV-side power supply, the HV-side power supply detection circuit outputting a second signal which is active when a voltage input from the HV-side power supply has a value equal to or higher

than a HV-side reference value that is higher than the LV-side reference value;

15 detection operation control means which receives the second signal from the HV-side power supply detection circuit and inactivates the operation of the LV-side power supply detection circuit when the second signal is active; and

20 LV-side power supply detection output fixing means which receives the second signal and outputs an active third signal as a signal corresponding to the first signal when the second signal is active.

2. A two-level supply voltage detection circuit according to claim 1, wherein the LV-side

25 power supply detection output fixing means is a logic circuit which receives the first signal and the second signal and outputs an active third signal when at least one of the first signal and the second signal is active.

3. A two-level supply voltage detection circuit according to claim 1, wherein:

25 the LV-side power supply detection output fixing means includes a resistor

and a first switch which are connected in series between a signal output terminal of the LV-side power supply detection circuit and the HV-side power supply; and

the first switch receives the second signal and is turned on only when the second signal is active.

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4. A two-level supply voltage detection circuit according to claim 1, wherein:

the detection operation control means includes a second switch inserted between the HV-side power supply and the LV-side power supply detection circuit; and

the second switch receives the second signal and is turned on only when the 10 second signal is inactive.

5. A two-level supply voltage detection circuit according to claim 1, wherein:

the detection operation control means includes a second switch inserted between a LV-side power supply and the LV-side power supply detection circuit; and

15 the second switch receives the second signal and is turned on only when the second signal is inactive.

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6. A two-level supply voltage detection circuit according to claim 1, wherein:

the LV-side power supply detection circuit includes

20 a reference voltage circuit for outputting a signal having a constant voltage regardless of the voltage of the HV-side power supply,

a LV-side supply voltage divider circuit for dividing the voltage of the HV-side power supply and outputting the divided voltage, and

25 a LV-side comparator circuit which receives the output signal from the reference voltage circuit and an output signal from a voltage dividing point of the LV-

side supply voltage divider circuit and outputs a first signal which is active only when the level of the output signal from the voltage dividing point of the LV-side supply voltage divider circuit is higher than the level of the output signal from the reference voltage circuit;

5 the HV-side power supply detection circuit includes
a HV-side supply voltage divider circuit for dividing the voltage of
the HV-side power supply at a dividing ratio such that the HV-side supply voltage divider
circuit outputs a voltage lower than the output voltage of the LV-side supply voltage
divider circuit, and

10 a HV-side comparator circuit which receives the output signal from
the reference voltage circuit and an output signal from a voltage dividing point of the HV-
side supply voltage divider circuit and outputs a second signal which is active only when
the level of the output signal from the voltage dividing point of the HV-side supply voltage
divider circuit is higher than the level of the output signal from the reference voltage
15 circuit; and

the detection operation control means inactivates at least one of the LV-side supply voltage divider circuit and the LV-side comparator circuit when the second signal is active.

20 7. A two-level supply voltage detection circuit according to claim 6, wherein:

the detection operation control means includes a second switch inserted between the HV-side power supply and the LV-side power supply detection circuit; and
the second switch receives the second signal and is turned on only when the second signal is inactive.

8. A two-level supply voltage detection circuit according to claim 6, wherein:

the detection operation control means includes a second switch inserted between the LV-side power supply and the LV-side power supply detection circuit; and

5 the second switch receives the second signal and is turned on only when the second signal is inactive.

9. A two-level supply voltage detection circuit according to claim 6, wherein:

the LV-side supply voltage divider circuit includes a first group of resistors provided between the HV-side power supply and the LV-side power supply; and

10 the HV-side supply voltage divider circuit includes a second group of resistors provided between the HV-side power supply and the LV-side power supply.

10. A two-level supply voltage detection circuit according to claim 9, wherein the total resistance value of the first resistor group is smaller than that of the second resistor group.

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11. A two-level supply voltage detection circuit according to claim 9, wherein

the detection operation control means includes a third switch inserted between the first resistor group of the LV-side supply voltage divider circuit and the LV-side power supply; and

20 the third switch receives the second signal and is turned on only when the second signal is inactive.

12. A two-level supply voltage detection circuit according to claim 11, wherein the total resistance value of the first resistor group is smaller than that of the second resistor group.

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13. A two-level supply voltage detection circuit according to claim 11, wherein the third switch is an NMOS transistor.